

IN THE CLAIMS:

I claim:

1. (withdrawn) A workpiece support apparatus for centerless grinding, comprising:
a carriage having an edge;
a rotatable spindle extending through the carriage and having an extending portion, the extending portion extending beyond the edge of the carriage;
a regulating roller mounted on the extending portion of the spindle, the regulating roller for supporting and rotating the workpiece;
a wheel dressing roller having a polishing outer surface and being mounted on the extending portion of the spindle distal of the carriage relative to the regulating roller; and
means for rotating the spindle which thereby rotates the regulating roller and the wheel dressing roller.
2. (withdrawn) The support apparatus according to claim 1, wherein the wheel dressing roller has an outer diameter which is less than the outer diameter of the regulating roller.
3. (Canceled)
4. (Canceled)
5. (Canceled)
6. (Canceled)
7. (Canceled)
8. (Canceled)

9. (withdrawn) A grinding apparatus capable of dressing a grinding wheel using a computer system having a user interface, the apparatus comprising:

- a user interface including a means for data input and a monitor;
- an input/output (I/O) interface board electronically connected to the user interface;
- a data processor electronically connected to the I/O board;
- a motion controller electronically connected to the I/O board;
- a y-axis drive unit electronically connected to the motion controller;
- a z-axis drive unit electronically connected to the motion controller;
- a y-axis motor electronically connected to the y-axis drive unit;
- a z-axis motor electronically connected to the z-axis drive unit;
- a grinding wheel;
- a rotatable wheel dressing roller;

the combination of the grinding wheel and the regulating roller being connected to the y-axis motor and the z-axis motor such that the y- and z-axis motors can cause the grinding wheel and the regulating roller to contact each other so that when the grinding wheel and the regulating roller are rotating, the grinder wheel will smooth the surface of the regulating roller,

the data processor being designed for controlling the y-axis motor to control the depth of grinding and for controlling the x-axis to control the grinding wheel and the regulating roller to sweep past one another longitudinally.

10. (withdrawn) A centerless grinding apparatus capable of dressing a regulating roller using a computer system having a user interface, the apparatus comprising:

- a user interface including a means for data input and a monitor;
- an input/output (I/O) interface board electronically connected to the user interface;
- a data processor electronically connected to the I/O board;

- a motion controller electronically connected to the I/O board;
- a y-axis drive unit electronically connected to the motion controller;
- a z-axis drive unit electronically connected to the motion controller;
- a y-axis motor electronically connected to the y-axis drive unit;
- a z-axis motor electronically connected to the z-axis drive unit;
- a grinding wheel;
- a regulating roller;

the combination of the grinding wheel and the regulating roller being connected to the y-axis motor and the z-axis motor such that the y- and z-axis motors can cause the grinding wheel and the regulating roller to contact each other so that when the grinding wheel and the regulating roller are rotating, the grinder wheel will smooth the surface of the regulating roller,

the data processor being designed for controlling the y-axis motor to control the depth of grinding and for controlling the x-axis to control the grinding wheel and the regulating roller to sweep past one another longitudinally.

11. (Canceled)

12. (Canceled)

13. (Canceled)

14. (Canceled)

15. (New) A workpiece support apparatus for centerless grinding, comprising:

- a carriage having an edge;

- a rotatable spindle extending through the carriage that has an extending portion extending beyond the edge of the carriage;

a regulating roller mounted on the extending portion of the spindle for supporting and rotating the workpiece;

a wheel dressing roller having a polishing outer surface and being mounted on the extending portion of the spindle distal of the carriage relative to the regulating roller; and

means for rotating the spindle which hereby rotates the regulating roller and the wheel dressing roller.

16. (New) The support apparatus according to claim 15, wherein the wheel dressing roller has an outer diameter which is less than the outer diameter of the regulating roller.

17. (New) A centerless grinding machine, comprising:

a workpiece support apparatus including a carriage with an edge;

a rotatable spindle extending through the carriage that has an extending portion extending beyond the edge of the carriage;

a regulating roller mounted on the extending portion of the spindle for supporting and rotating the workpiece;

a wheel dressing roller having a polishing outer surface and being mounted on the extending portion of the spindle distal of the carriage relative to the regulating roller; and

means for rotating the spindle which hereby rotates the regulating roller and the wheel dressing roller;

a computer system having a user interface, including a means for data input and a monitor;

an input/output (I/O) interface board electronically connected to the user interface;

a data processor electronically connected to the I/O board;

a motion controller electronically connected to the I/O board;

a y-axis drive unit electronically connected to the motion controller;

a z-axis drive unit electronically connected to the motion controller;

a y-axis motor electronically connected to the y-axis drive unit;

a z-axis motor electronically connected to the z-axis drive unit; and
a grinding wheel;

wherein the grinding wheel and the wheel dressing roller being connected to the y-axis motor and the z-axis motor such that the y- and z-axis motors can cause the grinding wheel and the wheel dressing roller to contact each other so that when the grinding wheel and the wheel dressing roller are rotating, the wheel dressing roller will smooth the surface of the grinding wheel, and

the data processor is operable for controlling the y-axis motor to control the depth of grinding and for controlling the x-axis to control the grinding wheel and the wheel dressing roller to sweep past one another longitudinally.

18. (New) The machine as claimed in claim 17, wherein the grinding wheel and the regulating roller are connected to the y-axis motor and the z-axis motor such that the y- and z-axis motors can cause the grinding wheel and the regulating roller to contact each other so that when the grinding wheel and the regulating roller are rotating, the grinding wheel will smooth the surface of the regulating roller; and
the data processor is operable for controlling the x-axis to control the grinding wheel and the regulating roller to sweep past one another longitudinally.

19. (New) The machine as claimed in claim 17, wherein the computer system operates a program for enabling a user through the user interface to control the processor of dressing the grinding wheel using the wheel dressing roller, the program comprising;
means for displaying a template which includes at least one value receptacle, the value receptacle relating to a variable in the process of dressing a grinding wheel;
means for accepting a value from the user and displaying the value in the value receptacle.

20. (New) The machine as claimed in claim 19, wherein the program comprises means for changing the value in the value receptacle to either increase or decrease the tolerances by using a mouse to scroll up or down a value list.
21. (New) The machine as claimed in claim 19, wherein the program further comprises means for enabling modification of the accepted value.
22. (New) The machine as claimed in claim 19, wherein the program enables a user through the user interface to control the processor of dressing the regulating roller using the grinding wheel, the program further comprising;
- means for displaying a template which includes at least one value receptacle, the value receptacle relating to a variable in the process of dressing a regulating wheel;
- means for accepting a value from the user and displaying the value in the value receptacle.
23. (New) The machine as claimed in claim 22, wherein the program further comprises means for enabling modification of the accepted value.